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ABSTRACT

American Sign Language (ASL) is historically related to French Sign Language (FSL) of the early 19th century. A study underway at Gallaudet College is researching the historical development of both languages treating syntax, lexicon and formation. This paper deals with data in the form of still photos collected in France and published in a dictionary by Pierre Oleron. Comparison is made of formational differences between modern FSL and modern ASL signs. Differences are discussed in terms of fluidity in compounds and differences in locations, movements and handshapes. Some differences relate to historical change processes in ASL: variations in fluidity of compounds; centralization; elbow-to-hand shift; morphological preservation; compensatory lengthening; simplification of movement; assimilation of movement; rule of thumb; loss of handshape; assimilation of handshape, and G-to-H change. Other variations may be products of early creolization of FSL and ASL: movement metathesis; maximal differentiation of movement; metathesis of handshape and maximal differentiation of handshape. When there is a relation of historical change between signs of FSL and ASL, the FSL sign usually has an older form. Relationships between FSL and ASL are highly systematic and similar to historical relationships among oral languages. (CHK)

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SIGNS OF CHANGE: HISTORICAL VARIATION IN AMERICAN SIGN LANGUAGE

James C. Woodward, Jr.

1.0 Introduction. American Sign Language (ASL) is historically related to French Sign Language (FSL) of the early 19th century. In 1816, T. H. Gallaudet, a hearing American who had learned FSL in Paris, along with Laurent Clerc, a deaf native of France, brought FSL to the U.S. Popular tradition states that ASL subsequently developed from FSL, but there is a growing body of information that suggests that FSL was creolized with a sign language or languages already existing in the U.S. before 1816 (Woodward 1975).

Very little research has been done on the historical development of either ASL or FSL. Members of the Gallaudet College Linguistics Research Laboratory are now engaged in historical study of these two languages. Drawing on previous research as well as recently collected data from 75 American and 60 French signers, the study will treat various aspects of FSL and ASL syntax, lexicon, and formation.

This paper deals with data in the form of still photos collected in France approximately 20 years ago by Pierre Oléron. Oléron has recently (1974) published a dictionary of 873 of these pictures, which will be compared in this paper with known data about various lects of ASL. That there is systematic variation in FSL based on age, region, social class, and sex is known, and study of it is forthcoming (Woodward & DeSantis 1975a,b); however, not all of the data on variation finds counterparts in Oléron's 1974 dictionary. We do have data on approximately one-fourth of the signs he prints from informants in Paris, Albi, and Marseilles. Subsequent analyses will compare the new data to the findings reported in this paper.

From our initial investigations we can say that most of the signs in Oléron's book are understood at least by the Paris deaf, and a significant number of the signs are still in use there. We are currently having the signs analyzed by a young native signer of FSL in Paris to see which of the signs are still being used by younger informants. We have also begun a search for a suitable ASL informant

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above the age of 80 (about the same age as Oléron's informant) who will analyze Oléron's book for signs that were used in the past in America but now may have dropped out of use.

This discussion of data now being sought is not meant to take away from the findings presented here but to put the analysis in proper perspective: There is still much to be done. This is the first comparison of the formation of Modern FSL using such a large number of signs.

Frishberg's study of older FSL and ASL dictionaries (1975) is referred to often here, since data that she describes has been supported by modern studies of sociolinguistic variation among Southern U.S. Black and White deaf signers (Woodward 1974; Woodward & Erting 1975). The data in Oléron (1974) indicates that changes completed in Frishberg's informants and still in process in Woodward's and Erting's informants had not begun to happen in older FSL informants. Woodward and DeSantis (1975a) have shown the same general trends in an empirical study of 75 American and 60 French informants, using signs on the face variably made with one hand or two. The two-hand forms are older (Frishberg 1975). The pattern of change was the same for all signers at a 93.3% rate of scalability. French signers used older two-hand variants more than did American signers ($X^2=52.01$, $df=1$, $p<.001$). White Americans over the age of 47 used older two-hand forms more than younger Whites ($X^2=5.17$, $df=1$, $p<.05$). Blacks under the age of 47 used older two-hand forms more than did Whites of the same age ($X^2=6.89$, $df=1$, $p<.01$).

Before we can discuss the categories of change discovered in Oléron's dictionary, it will be useful to review some previous research on ASL phonology. By sign phonology is meant the level of sublexical structure in a sign language that is analogous to but not dependent on the phonological component of oral languages (Battison 1974), i.e. the finite formational aspect of duality of patterning. Stokoe (1960 and 1965) initiated research on this level of sign language structure and pointed out three aspects of sign formational level that were distinctive at the phonetic and relatively deep levels of ASL phonology: the tab or place where the sign is made, the dez or hand configuration used to make the sign, and the sig or action performed in making the sign. Battison (1974) suggests a fourth "parameter", orientation, for sign formational analysis. Bellugi (1972) has given support to this kind of linguistic analysis by psycholinguistic tests that indicate that signs are processed in the short-term memory by means of these formational units, which she calls primes.

With the above discussion in mind, we will now look at changes that have occurred in ASL that still have not occurred in the language of Oléron's informant nor in the language of a number of our FSL informants. These differences will be discussed in terms of fluidity in compounds and of variation in locations, handshapes, and movements (tab, dez, and sig).

2.0 Fluidity. Frishberg (1975) describes fluidity as a natural historical change in ASL and defines this process as the smoothing of compound signs into one sign, either through loss of one element of the compound or through assimilation.

2.1 Loss of compound elements. Nine dictionary FSL compound signs are still produced as compounds in the data but have lost the first unit of the compound in ASL: WINTER, COIN, PLEASE, RAISE-AGAIN, FLOWER, KNOW, SOW, RAG, MODEL (ASL, SISSY). Younger signers of FSL were observed to use the smoothed forms for WINTER, PLEASE, and KNOW. It is not known what they do with the other compound signs. Five other FSL signs in the dictionary have lost the second part of the compound in ASL: EMBROIDER, COFFEE, CHINESE, CLOCK, CLOWN (ASL, FUNNY). Young FSL signers have been observed using the smoothed form of CHINESE, but their use of the other signs was not observed.

2.2 Assimilated compounds. The FSL sign GOAT has an O-dez in the first part of the compound and a bent V in the second. ASL uses bent V throughout the sign, which is perceived by most, if not all, ASL signers as a non-compound (see Figure 1, p. 52, for illustration of dez hands).

2.3 Summary of fluidity changes. Fluidity seems to be a stronger influence than most of the other forces that will be described in this paper, since when younger FSL signers were observed using these signs, they used the truncated or smoothed forms. These changes in fluidity are also complete in all researched varieties of ASL. This is not the case with other changes, such as moving the location of the sign from elbow to hand, which is well established for the ASL forms HELP, SUPPORT, WARN among others. This elbow-to-hand location shift has not occurred for most young FSL signers, nor have all other changes been completed panlectally in ASL. The trend of FSL to retain older forms is still supported, however, since none of the older FSL forms were found by Frishberg in ASL dictionaries as early as 1913, but Oléron's informant in France was utilizing these forms twenty years ago. There is only one exception to this trend (FSL older, ASL newer), the FSL sign REMEMBER. The citation form

in the FSL dictionary is one-hand, assimilated A-dez on the forehead. Many American signers still give a compound citation form with the assimilated A. FSL has lost the second part of the original compound, after handshape assimilation had occurred, while ASL is still in the process of losing the first part of the compound (Frishberg 1975).

3.0 Changes in location. Variations in location number 24. These signs fall into three groups: centralization, elbow-to-hand shift, and morphological preservation.

3.1 Centralization. Centralization explains most of the changes in the data. Centralization has been characterized by Frishberg (1975) as the movement of signs towards the center of the throat, which seems to be the center of the signing area.

3.11 Downward centralization. Downward centralization occurs in ASL on LAUGH, LIAR, NOTHING. LAUGH in the FSL data is made on the cheek, in ASL at the side of the lips. LIAR is executed under the nose in FSL, at the chin in ASL. NOTHING is made on the lips in FSL, in ASL NOTHING is made under the chin. Young FSL signers were seen doing LIAR under the nose.

3.12 Inward centralization. Five signs underwent inward centralization from the contralateral location (side of the body opposite the dominant hand making the sign) to the center of the chest: GLAD, SENSIBLE (ASL, FEEL), PITY (ASL, FEEL), SORRY, FAITHFUL (ASL, SWEETHEART), FRENCH. FAITHFUL (ASL, SWEETHEART) in ASL not only becomes centralized but is simplified from the chest tab into neutral signing space in front of the body (zero tab), a very common occurrence in conversational sign forms in ASL. FRENCH is signed by young French signers in a centralized position and adds an outward twisting movement from the body. ASL has taken this change one step further and performs the sign in zero tab.

3.13 Upward centralization. The signs FIRE and YOUNG move upward from the area around the lower trunk in FSL to the upper chest in ASL.

3.2 Elbow-to-hand shift. Woodward and Erting (1975) discussed the ongoing change in ASL lects among most signers of ASL, which moves the tab of signs like HELP and SUPPORT from the elbow to the hand. The FSL data indicates that such a change is not found in the signing of Oléron's informant. In the FSL dictionary, HELP, WARN, BEG, DOOR, and GUIDE are signed with elbow tab, while ASL signers almost exclusively use the hand. Exceptions are older ASL signers in Minnesota (Stokoe 1974) and Oklahoma (Carol Padden, personal communication), who still sign HELP on the elbow. GUIDE is signed on the hand

by a number of young FSL signers; however, the other signs are still signed on the elbow. A few school-age informants signed HELP and DOOR on either elbow or hand, indicating that the change is highly incipient in France.

Woodward and DeSantis (1975b) are presently engaged in an analysis of variations on elbow-to-hand shift on data from 75 American and 60 French signers. This analysis should give us a more exact idea of how fast the changes are actually going in FSL and ASL.

3.3 Morphological preservation. Frishberg (1975) describes morphological preservation as the change in a more pantomimic handshape to one that corresponds more closely to the morphology of a sign language. Thus STEAL in ASL is in process (Woodward & Erting 1975) of change from a more pantomimic grasping to a bent-V dez, which often denotes offensive behavior in ASL (Frishberg (1975). COUSIN, AUNT, and UNCLE, in zero tab in FSL dictionary and young informants' signing, are signed on the face in ASL. This shift may be an attempt at morphological preservation, since the facial area is used also for the ASL signs FATHER, MOTHER, GRANDFATHER, and GRANDMOTHER. Location plays a role in the morphological structure of ASL and can exert the same kinds of pressures as handshape variations for natural language change, as Frishberg shows with the example of WILL moving upwards to assume a position on the morphological "time line" of ASL.

3.4 Summary of location changes. In the data analyzed for this paper, location changes involve centralization, elbow-to-hand shift, and morphological preservation. Each type of variation has been observed independently in historical change in ASL, but it is now possible to state that these changes also mark differences between contemporary FSL and ASL, since FSL is more conservative in these changes than is ASL. Four forms did not follow any established patterns of historical changes in tabs. CHIEF is done on the elbow in FSL and on the shoulder in ASL. RICH is signed at the lower trunk in FSL and on the hand in ASL (possible upward centralization). CABBAGE is made on the hands in FSL and on the side of the head in ASL. YESTERDAY is made over the shoulder in FSL but makes contact with the cheek in ASL.

4.0 Changes in movement. Twenty signs undergo movement changes. There are five types of movement change that will account for the differences between Oléron's data and ASL: compensatory lengthening, simplification of movement, assimilation of movement, metathesis, and maximal differentiation.

4.1 Compensatory lengthening. Frishberg (1975) discusses compensatory lengthening, in which a compound sign that is simplified may compensate for the lost elements by a reduplication of movement. Once such example is PRINT in our data, which in FSL still has a long movement to the hand plus a closing movement of the open G-hand to bO ("baby O", see Figure 1); but in ASL the sign displays only a reduplicated G-to-bO action.

4.2 Simplification of movement. Movement can be simplified through change and/or loss of movement. FSL GENTLEMAN (ASL, FANCY) wiggles the fingers and whole hand as it moves down the trunk. ASL FANCY has lost the downward movement, and only the fingers wiggle. Loss of movement is found in the ASL versions of TIRED and ANGER. FSL TIRED has movement down the trunk, which has been lost in the ASL sign. ANGER in FSL has upward reduplicated movement; in ASL the upward movement is not reduplicated.

4.3 Assimilation of movement. Assimilation of movement occurs in LOSE and SNOW. LOSE is signed in FSL with movement of the dominant hand only, in ASL with symmetrical movement of both hands. FSL SNOW alternates hand movements, in ASL both hands move in the same direction at the same time. These examples of assimilation can be explained naturally by the principle of symmetry in signing. "Symmetry reduces the complexity of signs and creates much redundancy in the signal. Although it has not been tested experimentally, it seems safe to hypothesize that symmetry reduces the perceptual load in reading signs"(Battison 1974: 11). Symmetry has also been used by Frishberg (1975) to explain the addition of a symmetrical hand in newer forms produced on the lower part of the trunk. Siple (1973) has suggested that signs produced in the low trunk area are beyond the area of high visual acuity, since the "listener's" eyes attend to the lower part of the signer's face. The addition of another symmetrical hand could allow for easier perception because of increased redundancy. This seems to be the case with INFERIOR, which is produced low on the trunk in FSL with one 5-hand and low on the trunk in ASL with two 5-hands.

4.4 Movement metathesis. Movement metathesis occurs in two signs, BUY and APPROACH. Both signs in FSL have inward movement of the non-dominant hand, but in ASL have outward movement of the dominant hand. This change can be seen as natural since the non-dominant hand in ASL very rarely moves unless the dominant hand also moves. In older ASL signs where the non-dominant hand moved, e.g. EARTH, the dominant hand now moves. However the direction of movement in EARTH has not brought a similar change in ASL BUY and APPROACH. This type of movement change is discussed below under maximal differentiation.

4.5 Maximal differentiation. This change involves a reversal in the direction of movement of a sign. At the present time, there seems to be no natural explanation for this reversal of movement. Perhaps this reversal may be similar to the kinds of metathesis one observes in pidginization and creolization of oral languages, since maximal differentiation involves a reversal in order of the beginning and end points of movement.

It is quite possible that FSL was creolized with existing ASL signing varieties at the time of contact in 1816 (Woodward 1975). There it was found that only 57.3% of the 872 signs in the Oléron dictionary were cognate with modern ASL. Thus 42.7% of the signs has no formational or semantic relation to American signs. Such a percentage would hypothetically date the arrival of FSL in America around 400 to 500 A.D. This 1300 to 1400 year discrepancy could possibly be explained through creolization, since language change occurs extremely rapidly in creoles as compared with other languages. Also if American deaf people did not have any varieties of signing, it seems reasonable to asume that they would have adopted FSL with less drastic changes from Clerc. The maximal mutations of direction and movement seem to be too drastic to be the results of natural language change, but may be consonant with the massive restructuring that occurs in creolization.

In FSL, HISTORY (ASL, TRADITION) moves inward but outward in ASL. FSL signs with downward movement, GLAD, DIFFERENT, SHAME, change to upward movement in ASL. FIGHT, PREVENT, NIGHT (ASL, DARK), are made with uncrossed arms, the arms are crossed in ASL. FSL DO has the left hand moving left and the right hand moving right; in ASL both hands first move left and then right. The FSL sign FRENCH is done with no movement in the Oléron dictionary but with outward twisting (palm turns out) by younger French signers. ASL FRENCH is done with inward twisting (palm turns inward toward body).

4.6 Summary of movement changes. Five types of movement change occur in the data: compensatory lengthening, simplification of movement, assimilation, movement metathesis, and maximal differentiation. The first three changes seem to be natural historical changes. Maximal differentiation may be a type of metathesis, and with metathesis seems to constitute some evidence of earlier creolization. Only two signs out of twenty with movement change do not fit the schema described: WHITE and FINISH both have downward movement in FSL. FINISH has down and out movement in ASL, and WHITE has lost the downward movement and added outward movement in ASL. This use of outward may be related to simplification of signs away from the body, as

noted in the earlier section on location change. Thus these changes of WHITE and FINISH may also have some natural motivation.

5.0 Handshape changes. Since this study is concerned with internal language change and not changes due to borrowings from other languages, we will not discuss any initial-dez FSL or ASL signs (Stokoe et al. 1965:xxv), because these are clear evidence of influence by an oral language. Sixteen of the signs showing formational differences, FSL to ASL, had differences of handshape due to initialization: HERE, YOUNG, LAW, FEAR, READY, ANSWER, WIND, ALIVE, WINE, LIVE, SUNDAY, MONDAY, TUESDAY, WEDNESDAY, THURSDAY, FRIDAY. Other handshape changes are related to internal language changes, which fall into four basic types: thumb extension, simplification, metathesis, and maximal differentiation.

5.1 The rule of thumb (extension). Battison, Markowicz, and Woodward (1975) discuss historical change in ASL handshapes where older G and H handshapes were currently incpiently extending thumbs. This change was explained through a weighted feature analysis that argued for naturalness based on ease of articulation. Three signs in the data were found to be related by this alternation. ACCIDENT and DROWN have S-dez in FSL and A-dez in ASL (thumb extension in the latter). PLAY has I-dez in FSL and Y-dez (I plus thumb extension) in ASL.

5.2 Simplification of handshapes. Handshapes like movements can be simplified through loss or assimilation.

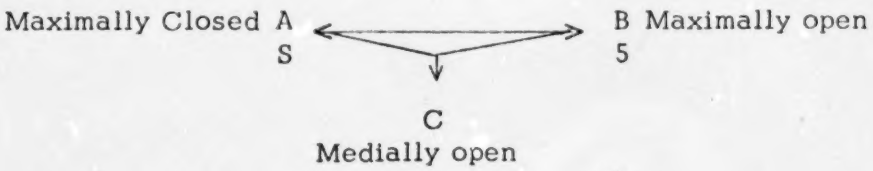
5.21 Loss of handshape. Loss of the non-dominant hand occurs in the sign HOOK: FSL has a non-dominant G-hand lost in the ASL sign. Another type of loss occurs when a French sign (one or two-handed) changes handshape in articulation of the sign; the American cognate has only one handshape throughout. Thus, FSL DO (CC→SS), SOCIETY (C→O), FREEDOM (SS→55), and SELL (OO→55). In each of these signs the ASL counterpart retains the first handshape, losing the second. There are also four cases where the ASL sign uses two handshapes and the French sign but one: BEE (bO→S), 'to be photographed' and 'to take a picture' (really one sign inflected for object) (C→O), and AWFUL (88→55). In FSL the first two of these use only the first dez; AWFUL uses only the second.

5.22 Assimilation of handshape. Assimilation of the non-dominant tab hand occurred in four signs: COVER (F, S5; A, 55), SUPERVISE (F, SK; A, KK or VV), WHEN (F, BG; A, GG), BAD (ASL-WORSE: F, SV; A, VV). Even though SUPERVISE and BAD involve changes from unmarked to marked, the assimilation can still be seen as a natural change, since assimilation overrides constraints in all languages (Bailey 1973).

5.3 Metathesis of handshape. This change has been found to occur rarely in ASL (Woodward & Erting 1975). Metathesis is found in three signs in the data: START (GV→VG), SHOW (GB→BG), REPRESENTATIVE (GB→BG).

5.4 Maximal differentiation of handshape. Like maximal differentiation in movement, this change involves reversal of perceptible features. Handshapes in sign languages can be distinguished by relative openness (extension of fingers) or closure (non-extension of fingers): E.g. A and S are maximally closed, with no fingers extended; B and 5 are maximally open, with all fingers extended; C is medially open; all fingers are extended but all are also bent. These handshapes appear to be the most unmarked in sign languages. There are several reasons for this: (1) They occur in most, if not all, of the world's sign languages: (2) they are acquired earliest by children learning ASL (Boyes 1973; McIntire 1974); and (3) they are the least restricted in occurrence in ASL (Battison 1974), since they are the only handshapes that can be used in signs requiring a non-dominant or passive hand different from the dominant hand.

Some signs which have maximally closed hands in FSL are related to signs which are open or maximally open in ASL. Maximally closed FSL A becomes medially open ASL C in DRINK and COMB-ONESELF, and maximally open B in PAY-ATTENTION and PRINT. Maximally closed FSL S changes to maximally open ASL 5 in ACCLAMATION and DRESS and to maximally open ASL B in FALL (verb) and KISS. Some maximally open FSL handshapes are medially or maximally closed in ASL: CONGRATULATE (B→C), NOW (B→bent-B or Y), TIRED (5→C), HOW (5→C), PROTECT (5→S), and UNDER (5→A). Medially open FSL C can become maximally open or closed in ASL: SAD (C→5), AVOID (C→A). Medially open C in FSL TEACH has closed to O in ASL. These variations are diagrammed below in a way that suggests C may be an intermediate stage in the process of maximal differentiation:



Maximal differentiation within ASL is found in only a few non-assimilated non-dominant or passive handshapes; e.g. HARD (tab hand B or S). The number of signs which are definitely related by maximal differentiation across FSL and ASL is substantial in com-

parison; there are some more tentative examples of maximal differentiation discussed in the next section. Maximal differentiation may be a remnant of creolization in ASL as maximal differentiation of movement appears to be. But this is more difficult to illustrate, since maximal differentiation of handshape, unlike that of movement, does not involve a temporal order of occurrence and thus does not appear on the surface to be related to metathesis.

5.5 Other variations in handshape. There are other variations (systematic and non-systematic) which do not fall into the four major processes considered above.

5.51 FSL A handshape. FSL A (closed fist) handshape has a counterpart in G (index extended from fist) in ASL MONTH, PAY, ALONE, and VACCINATE.

5.52 FSL G handshape. FSL signs with G handshapes (index) have ASL counterparts with H (index and middle fingers extended but not spread) or in open-8 (thumb and fingers extended and spread, middle finger bent). The change of G in older ASL to H in modern ASL is documented by comparing the 1910 film of E.M.Gallaudet signing "The Lorna Doone Country" (the first lecture ever filmed in ASL, according to the National Association of the Deaf) with modern ASL. Gallaudet signs NAME 'to be named' with a G handshape; more modern signers use an H handshape. This change might be initialization, since manual alphabet H and N are similar and there is no N handshape in ASL, but there are other examples of non-initialized change of G to H within ASL: WEIGH, TRAIN, KNIFE, GUN. There is no evidence at the present time to suggest that G/open-8 variation is historical, although there is some evidence of a historical relationship in an 8-hand to F-hand variation observed in U.S. signing (not found in the 60 French signers we observed). Summing up: FSL G becomes ASL H in NAME(D), but ASL open-8 in BALD, TASTE, and TOUCH.

5.53 FSL bO handshape. The FSL handshape bO ("baby O" made by touching thumb and index tips with hand otherwise closed) may appear in ASL as X (simple loss of contact, index still bent), 5 or B (loss of contact and change to maximally open hands) seems to be a case of maximal differentiation. The bO hand in FSL TEASE, THIRST, SMELL, and HOUSEPAINTER becomes respectively X, G or 5, B, and B in ASL.

5.54 FSL X handshape. HARD has an X handshape (index extended and bent) in FSL and a bent V handshape in ASL. This extension of the middle finger (which differentiates X and V) may be part of the same general process relating the extension of the middle finger in FSL G/ASL H variants. JOIN and its negative DISJOIN both have two hands in X shape in FSL, two F handshapes in ASL. This variation may be related to maximal differentiation, since X is very closed and F open.

5.55 FSL F handshape. The older F handshape (contact made with the thumb on the contra side of the index, other fingers extended) is found in the FSL sign FRENCH in the dictionary and in other signs of informants observed in France. Most American signers, especially if they are younger and non-Southern, will use the modern F variant (contact with thumb tip and index tip).

5.56 FSL L handshape. Some signs with L (thumb and index finger extended to make a right angle) in FSL have V or B hands in ASL. The L/V variation is based on morphophonemic shape of the numeral 2. ASL TWO, TWICE, DOUBLE involve V handshapes, while TWENTY uses L. Variation between very closed L and maximally open B may be another case of maximal differentiation: L in FSL YAWN and HAPPY becomes B (two-hands, LL→BB in the latter) in ASL.

5.57 FSL V handshape. In some signs, variation between FSL and ASL is in relative bending of the fingers only: e.g. V/bent-V; in others, deletion of the middle finger (V/X); in still others, the handshape is maximally opened (V/5). Not including maximal differentiation, which of its very nature requires bidirectional restructuring, the examples of V→X and bent-V→V variation are the only exceptions to unidirectional change in handshape. Examples: (all from FSL to ASL) BLIND, V to bent-V; SHEEP, bent-V to V; DENTIST bent-V to X; REST, double V's to double 5's.

5.58 FSL 5 handshape. Besides maximal differentiation FSL 5 has two other variations with ASL handshapes: SKATE is done with two 5 hands in FSL and two X hands in ASL; ROOSTER (FSL 5) uses 3 (thumb, index, and middle fingers extended and spread) in ASL. Both these examples seem to be spurious and not systematic.

5.59 FSL H, O, and Y handshapes. Comparatively closed FSL H appears as maximally open B in ASL PAINT, as I (pinky extended) in ASL DRAW, and open-8 in ASL NAKED. The variation of H with I and 8 seems to be spurious; while the variation of H and B seems to be related to maximal differentiation.

Three signs in FSL with O (thumb contacting fingertips) have different handshapes in ASL: GOATEE (O to G), HORN (O O to Y Y), and SERVE (O O to B B). Only the last seems to have formational rationale, i.e. maximal differentiation.

CREAM is made with a comparatively closed Y hand in FSL and with a medially open C in ASL. This may be related to maximal differentiation.

6.0 Summary. This paper has discussed formational differences between modern FSL signs and modern ASL signs. The differences were discussed in terms of fluidity in compounds, and differences in

locations, movements, and handshapes. Some differences are related to established processes of historical change in ASL: variations in fluidity of compounds (2.0), centralization (3.1), elbow-to-hand shift (3.2), morphological preservation (3.3), compensatory lengthening (4.1), simplification of movement (4.2), assimilation of movement (4.3), rule of thumb (5.1), loss of handshape (5.21), assimilation of handshape (5.22), G-to-H change (5.52). Other variations may be remnants of earlier creolization of FSL and ASL: movement metathesis (4.4), maximal differentiation of movement (4.5), metathesis of handshape (5.3), and maximal differentiation of handshape (5.4). The rest of the variations may be related to historical change or to maximal differentiation, especially if there are a number of such variations as FSL A to ASL G variations (5.51), or they may be spurious.

Looking at the examples of historical change, we see the same pattern that emerged in Woodward and DeSantis (1975a): Whenever there is a relation of historical change between a sign of FSL and a sign of ASL, the FSL sign will tend to have an older form. There were 54 FSL signs that were related to ASL through established processes of historical change. Of these 54, FSL had 50 signs that were older in form than their ASL counterparts and 4 signs that used newer forms where ASL had older forms. Thus in 92.6% of these cases, FSL had the older form. The cause for this situation is not known, but deep anthropological and sociolinguistic studies of FSL and ASL communities may reveal some rationale.

From the preliminary evidence presented in this paper, we see that historical relationships between FSL and ASL are highly systematic and similar to historical relationships among oral languages. Many further studies of FSL and ASL are needed to refine these relationships and their causes.

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